

## Remarks/Arguments

### **Summary**

Independent claim 1 and dependent claim 21 were amended and claims 14-18 were cancelled. Accordingly, claims 1-2, 4-10, 12-13, and 19-21 are currently pending in this application.

### **Telephone Conversation of January 22, 2007**

In a telephone conversation dated January 22, 2007, the Examiner very helpfully explained and clarified her position regarding the interpretation of independent claim 1. In particular, the Examiner explained that for purposes of her previous rejections and the pre-appeal panel review, she and other Examiners interpreted the bottom surface of the recess in claim 1 not to be limited to a **planar** bottom surface. She further explained that her previous rejections of independent claim 1 did not point out a planar bottom surface in any of the cited references because she did not believe that a planar bottom surface was needed to support the rejections.

In light of this very helpful conversation, applicants have now amended claim 1 to clearly recite a recess having a planar bottom surface.

### **Claim Rejections – 35 U.S.C. § 102(b)**

In the final office action dated May 17, 2006, claims 1, 5-6, 10, 13, and 21 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,814,839 to Hosoba ( "Hosoba"). The rejection is respectfully traversed for at least the following reasons.

#### Claim 1

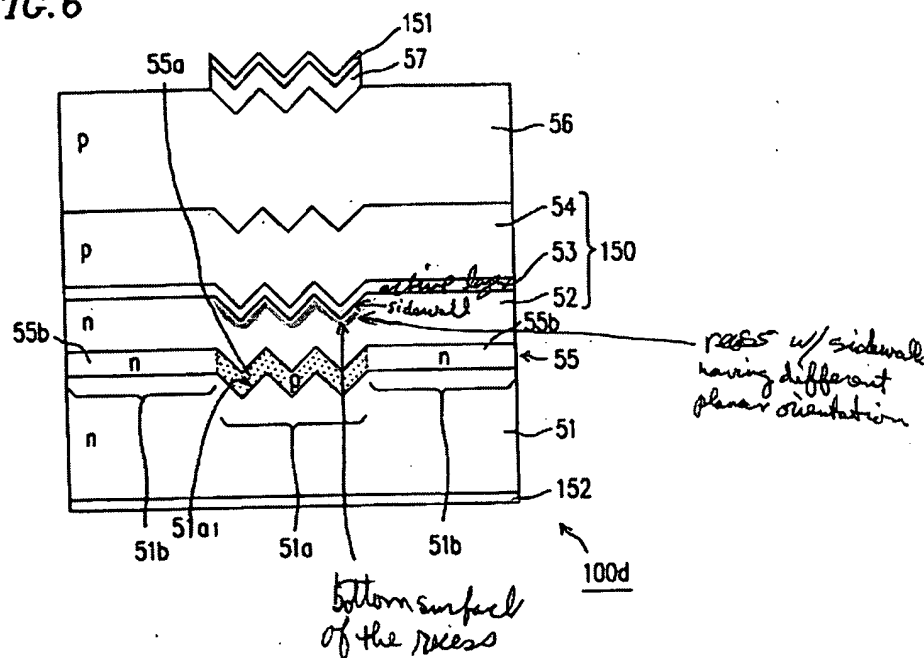
Among other things, claim 1 now recites "a recess formed on a major surface of [an] n-type semiconductor layer, the recess having a **planar** bottom surface and planar sidewalls each having a different planar orientation from the bottom surface" (emphasis added). One embodiment of such a feature is shown in FIG. 5 of the present application.

Applicants respectfully submit that Hosoba does not disclose such a feature.

The Examiner states that FIG. 6 of Hosoba shows a recess having a bottom surface and sidewalls and states that "the bottom of the recess has a bottom surface regardless of the size of the surface". (See, Advisory Action, page 2). However, the so-called recess in Hosoba does not have a **planar** bottom surface or a bottom surface having a particular **planar orientation**. Accordingly, the rejection of claim 1 is defective and should be withdrawn.

Fig. 6 of Hosoba is included below, together with the Examiner's handwritten annotations.

**FIG. 6**



As seen in FIG. 6 and as described in the disclosure of Hosoba, "each slope of the V-grooves 51a<sub>1</sub> [and therefore the V-grooves in layer 52] has an orientation of a (111) A plane." (See, Hosoba at col. 24, lines 28-31). In other words, the so-called recess in layer 52 of Hosoba is created by performing crystal growth on substrate 51 using "an MOCVD method during [a] first crystal growth step". (See, Hosoba, col. 25, lines 5-8). As a result, two crystal planes are formed by the so-called recess, both planes having an "A plane" crystal orientation. Because the so-called recess in FIG. 6 in Hosoba DOES NOT contain an additional "planar bottom surface" having a different planar orientation from the two crystal planes, the rejection of claim 1 is defective and should be withdrawn.

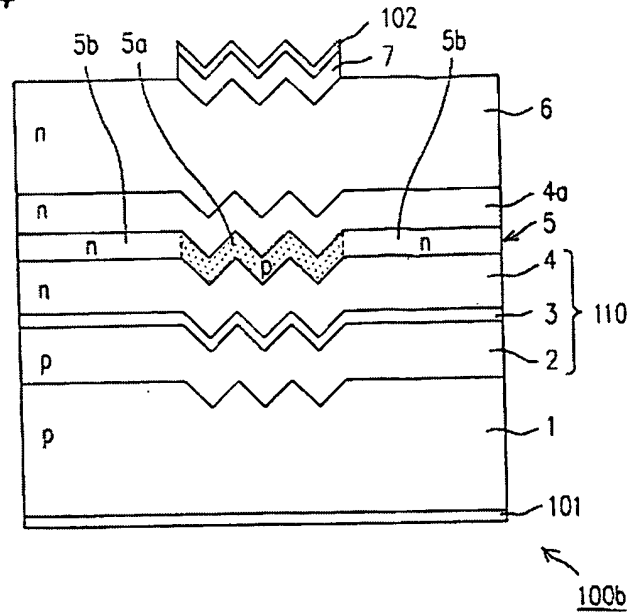
Claims 5-6, 10, 13, and 21

Claims 5-6, 10, 13, and 21 depend from claim 1 and are deemed patentable for at least the reasons set forth above with respect to claim 1 and also the following reasons.

Claim 6

The final office action rejected claim 6, stating that "Hosoba discloses that at least one of surfaces of the n-type *semiconductor layer 250* (fig. 4) contiguous to the *active layer 310* (fig. 4) is a surface vertical to the major surface of the n-type semiconductor layer 250." (See, final Office Action, page 3, paragraph 2, emphasis added). Fig. 4 of Hosoba is shown below.

**FIG. 4**



By inspection of Fig. 4, it can clearly be seen that Fig. 4 of Hosoba **does not contain any elements labeled 250 or 310**. Accordingly, the rejection of claim 6 is factually defective and should be withdrawn.

Claim 13

Claim 13 recites "wherein the active layer emits light components having two or more *different major peak wavelengths*, and the light components are *mixed* to produce a color." (emphasis added). Hosoba fails to recite this feature. Instead, Hosoba only

discusses emitting light with one peak wavelength: “pure green emitted light...at a peak wavelength of 555nm” (See, Hosoba at col. 25, lines 45-47). Accordingly, the rejection of claim 13 is defective and should be withdrawn.

#### Claim 21

Claim 21 has been amended so that it now recites “wherein the recess is one of a plurality of triangle shaped recesses formed in the n-type semiconductor layer, as viewed from an upper surface of the n-type semiconductor layer.” In other words, the recesses of claim 21 are triangle shaped as viewed from an upper surface of the n-type semiconductor layer. Exemplary embodiments of this feature are disclosed in FIG. 1 of the present application. Since Hosoba does not disclose recesses that are triangle shaped when viewed from an upper surface of an n-type semiconductor layer, claim 21 is deemed patentable over Hosoba.

#### ***Claim Rejections – 35 U.S.C. § 103***

Claims 2, 4, 7-9, 12, and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hosoba in view of U.S. Patent No. 6,285,698 to Romano et al. (“Romano”). Claim 19 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Hosoba. These rejections are improper for at least the following reasons.

#### Claims 2, 4, 7-9, 12, and 19-20

Claims 2, 4, 7-9, 12, and 19-20 depend from claim 1 and are deemed patentable for at least the reasons set forth above with respect to claim 1 and also the following reasons.

#### Claim 9

Claim 9 recites “wherein the active layer comprises a plurality of M or A planes that intersect each other at angles of 30°, 60°, 90°, 120°, 150°, 210°, 240°, 270°, 300° or 330°, as viewed from an upper surface of the n-type semiconductor layer.” Exemplary embodiments of this feature are illustrated in FIG. 2 of the present application. Hosoba and Romano both fail to disclose M or A planes having any

**intersection whatsoever** as viewed from an upper surface of an n-type semiconductor layer. Accordingly, the rejection of claim 9 is defective and should be withdrawn.

#### Claim 19

The final office action rejected claim 19, stating that "Hosoba does not explicitly teach that the M or A planes of the active layer make an angle of 30, 60, ..., 300, or 330 degrees, as viewed from the upper surface of the first conductive layer 250 (fig. 4)." (See, final Office Action, page 6, last paragraph).

Again, by inspection of Fig. 4 of Hosoba shown above, it can clearly be seen that **Hosoba does not contain any element labeled 250**. Accordingly, the rejection of claim 19 is factually defective and should be withdrawn.

Moreover, claim 19 recites, among other things, recesses having a "*repetitively corrugated shape* with back-to-back side face angles of 120° and 240°" (emphasis added). One embodiment of the invention including this feature is shown in Fig. 9 of the present application. The final office action **fails to even address this feature**, and therefore the rejection of claim 19 is further defective and should be withdrawn.

#### **Conclusion**

No further issues remaining, Applicants respectfully request withdrawal of current rejections and allowance of pending claims 1-2, 4-10, 12-13, and 19-21.

Respectfully submitted,

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